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The COVID rash that puts the 'U' in GROUCH!

Landon Hope, MBA[a], Brianna Hope, MPH[a], Jeannie Nguyen, MD[b], Richard Hope, MD[c], and Michelle Tarbox, MD[b]

[a]School of Medicine, Texas Tech University Health Sciences Center, Lubbock, Texas; [b]Department of Dermatology, Texas Tech University Health Sciences Center, Lubbock, Texas; [c]Lubbock Dermatology and Skin Cancer Center, Lubbock, Texas

ABSTRACT

As COVID-19 continues, there are new manifestations and less common presentations of this illness of which we need to be aware. This case describes a 44-year-old woman with a new-onset rash on her lower back and inner thighs. Based on a punch biopsy of both locations, either severe urticaria or early urticarial vasculitis was diagnosed. The patient recovered after treatment with a combination of oral steroids and high-dose antihistamines. Two days after the biopsy, she tested positive for SARS-CoV-2. The urticarial vasculitic reaction was likely secondary to infection from COVID-19 and was the initial presentation of the disease.

KEYWORDS COVID-19; cutaneous manifestations; dermatology; rash; urticarial vasculitis

Various cutaneous eruptions have been described in a minority of patients with coronavirus. In some cases, skin findings have been the sole symptom of infection with SARS CoV-2. Eruptions associated with COVID-19 infection have recently been grouped into the mnemonic GROUCH, which stands for generalized maculopapular (20.7%), Grover's disease and other papulovesicular eruptions (13.8%), livedo reticularis (6.9%), other eruptions (22.4%), urticarial (6.9%), and CHilblain-like (29.3%).[1,2] Up to 25% of patients will present with a cutaneous eruption either before other symptoms arise or as the independent symptom of their infection.

CASE DESCRIPTION

A 44-year-old woman presented to the outpatient dermatology clinic with complaints of a new-onset rash on her lower back and inner thighs *(Figure 1a)*. Biopsy of both locations showed a normal-appearing epidermis and a superficial and deep perivascular mixed inflammatory infiltrate in the dermis composed of eosinophils, neutrophils and neutrophil fragments, lymphocytes, and extravasated red blood cells. Focal fibrinoid necrosis of blood vessel walls was seen within the mid-dermis *(Figure 1b, 1c)*. The patient's clinical presentation and histologic findings from both biopsy specimens were consistent with early urticarial vasculitis. She was treated with a combination of oral steroids and high-dose antihistamines and had complete resolution of her lesions. Interestingly, 2 days after the biopsies, she tested positive for SARS-CoV-2—which adds urticarial vasculitis, as seen in our patient, to the soiree of potential cutaneous findings associated with COVID-19.

DISCUSSION

Giavedoni et al reported cutaneous manifestations of COVID-19 appearing in 58 of 2761 (2.1%) patients.[2] These 58 cases represented an astounding 52% of dermatology consultations during this same time frame. Skin lesions that appear in patients with COVID-19 typically develop after other coronavirus symptoms appear.[2] However, approximately 25% of patients with cutaneous manifestations will develop them either before other symptoms arise or as the independent symptom of their infection. Patients with a rash and COVID-19 most often develop a fever, followed by a cough, shortness of breath, and fatigue.[3] Many cutaneous manifestations have been described in association with COVID-19, which include but are not limited to morbilliform rash, varicelliform eruption, urticarial formation, acral lesions (COVID toes), and livedoid eruptions.[4]

Urticarial vasculitis is believed to be a type III hypersensitivity reaction with immune complex depositions and is one of the clinical expressions of leukocytoclastic vasculitis.[5] Many causes of urticarial vasculitis exist, the most frequent of which are drug reactions, viruses, and autoimmune diseases. Clinically, urticarial vasculitis is characterized by the appearance of urticarial lesions similar to wheals, with

Corresponding author: Landon Hope, MBA, 5208 Kemper Street, Lubbock, TX 79416 (e-mail: landon.hope@ttuhsc.edu)
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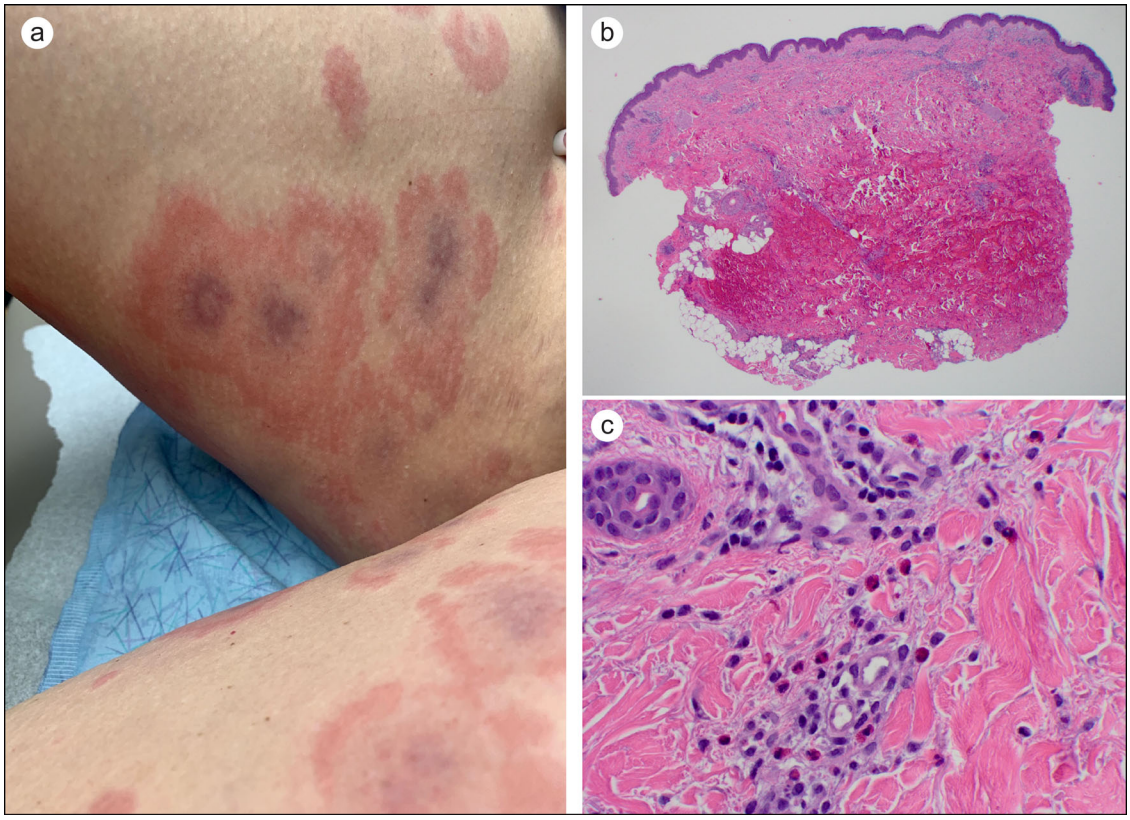

Figure 1. **(a)** Polycyclic edematous erythematous plaques without scale with violaceous discoloration centrally. **(b, c)** Sections displayed a normal-appearing epidermis with a brisk mixed perivascular infiltrate composed of eosinophils, neutrophils and neutrophil fragments, lymphocytes, and extravasated red blood cells. Focal fibrinoid necrosis of blood vessel walls was seen within the mid dermis and vascular endothelial cells appear swollen.

individual lesions present >24 hours. Although the lesions may be asymptomatic, they can be accompanied by a burning sensation, pain, and fever. Laboratory findings can include hypocomplementemia, especially in cases linked to connective tissue diseases.[5]

The connection between COVID-19 and vascular damage has been well established.[6] COVID-19–associated vasculopathy occurs inside the blood vessels via endothelial cell inflammation, apoptosis, dysfunction, and immune complex deposition. COVID-19, like many other viruses, can gain entry to the endothelial cells via binding to heparan sulfate. Damage can then lead to disease processes such as urticarial vasculitis, central nervous system vasculopathies, and varicella-like exanthems.[6]

One of the biggest challenges in describing cutaneous lesions is uncovering the inciting factor. Many of the lesions in COVID-positive patients have been described in critically ill patients who are receiving advanced care and taking a multitude of new medications. These medications could be the possible inciting factor for many of the observed rashes; however, it is important to continue to note cutaneous lesions in COVID-positive patients as we continue to refine our understanding of the virus and its manifestations in order to make a correct and swift diagnosis for future patients.

1. Lee DS, Mirmirani P, McCleskey PE, et al. Cutaneous manifestations of COVID-19: a systematic review and analysis of individual patient-level data. *Dermatol Online J*. 2020;26(12):13030/qt7s34p8rw.
2. Freeman EE, McMahon DE, Lipoff JB, et al. The spectrum of COVID-19–associated dermatologic manifestations: an international registry of 716 patients from 31 countries. *J Am Acad Dermatol*. 2020; 83(4):1118–1129. doi:10.1016/j.jaad.2020.06.1016.
3. Giavedoni P, Podlipnik S, Pericàs JM, et al. Skin manifestations in COVID-19: prevalence and relationship with disease severity. *JCM*. 2020;9(10):3261. doi:10.3390/jcm9103261.
4. Young S, Fernandez AP. Skin manifestations of COVID-19. *Cleve Clin J Med*. 2020. doi:10.3949/ccjm.87a.ccc031.
5. de Perosanz-Lobo D, Fernandez-Nieto D, Burgos-Blasco P, et al. Urticarial vasculitis in COVID-19 infection: a vasculopathy-related symptom? *J Eur Acad Dermatol Venereol*. 2020;34(10):e566–e568. doi:10.1111/jdv.16713.
6. Becker RC. COVID-19-associated vasculitis and vasculopathy. *J Thromb Thrombol*. 2020;50(3):499–511. doi:10.1007/s11239-020-02230-4.